

REMARKS

In response to the Office Action mailed July 18, 2003, Applicant respectfully requests reconsideration. To further the prosecution of this Application, Applicant submits the following remarks, has amended claims and has added new claims. The claims as now presented are believed to be in allowable condition.

Claims 13-27 were pending in this Application. By this Amendment, claims 28-31 have been added. Accordingly, claims 13-31 are now pending in this Application. Claims 13, 14, 17, 18, 19 and 25 are independent claims.

Allowed Claims

Claims 19 and 20 have been allowed.

Claims 14-15, 17, 18, and 23-24 were objected to as being dependent on a rejected base claim but were deemed allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims.

Applicant has rewritten claims 14, 17 and 18 in independent form so that claims 14, 17 and 18 are now in allowable condition.

Claim 15 depends from claim 14 and thus does not need to be rewritten.

Claims 23-24 already depend from an allowed base claim (i.e., claim 19) and thus do not need to be rewritten.

Rejections under §103

Claims 13, 16, 21-22 and 25-27 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,593,080 (Teshima et al.). To further the prosecution of this Application, Applicant has amended claims 13 and 25. Applicant respectfully submits that claims 13, 16, 21-22 and 25-27 are now in allowable condition.

Teshima discloses a mask 20 for printing solder paste 8 on a circuit board 1 (column 5, lines 23-28 and Figs. 4(A) and 4(B)). The mask 20 includes fine mask holes 22 and normal mask holes 23 (column 5, lines 29-30 and Fig. 4(A)).

Teshima further discloses another mask 30 having fine mask holes 32 and normal mask holes 33 (column 6, lines 33-37 and Figs. 6(A), and 6(B)). The mask holes 32 and 33 are respectively formed by an etching process (column 6, lines 51-52). The fine mask holes 32 have an approximate circular shape, and the normal mask holes 33 have an approximate square shape (column 6, lines 51-56). Teshima explains that it is desirable to arrange the fine mask holes 32 in a checker-board (or zigzag) pattern so that there is no possibility of bridging (column 7, lines 37-44).

Claims 13, 16 and 21-22

Claim 13 is directed to a method for mounting a circuit board component to a circuit board. The method includes the step of positioning a solder paste distribution tool over a mounting location of the circuit board. The solder paste distribution tool defines a solder paste aperture having a non-circular cross-sectional shape which includes partially coinciding circles. The method further includes the steps of applying solder paste to the mounting location of the circuit board through the solder paste distribution tool such that a portion of the solder paste passes onto the mounting location through the solder paste aperture having the non-circular cross-sectional shape, removing the solder paste distribution tool from the mounting location, and disposing the circuit board component over the mounting location and providing heat to form solder joints between the circuit board component and the circuit board. One of the solder joints is formed from the portion of the solder paste that passed onto the mounting location through the solder paste aperture having the non-circular cross-sectional shape.

Teshima does not teach or suggest a method for mounting a circuit board component to a circuit board having a step of positioning a solder paste distribution tool over a mounting location of the circuit board where the solder paste distribution tool defines a solder paste aperture having a non-circular cross-sectional shape which includes partially coinciding circles, as recited in

claim 13. Rather, Teshima places focus on arranging fine mask holes 32 in a checker-board (or zigzag) pattern so that there is no possibility of bridging. Additionally, it is unclear why one would want to modify Teshima to use a tool having such an aperture. The use of such a tool in the method of claim 13 enables control of solder movement relative to a stringer, as described in the Specification, for example, on page 8, line 24 through page 9, line 4. There is no such teaching or suggestion of using such a tool in Teshima.

For the reasons stated above, claim 13, as amended, patentably distinguishes over the cited prior art, and the rejection of claim 13 under 35 U.S.C. §103(a) should be withdrawn. Accordingly, claim 13 is now in allowable condition.

Because claims 16 and 21-22 depend from and further limit claim 13, claims 16 and 21-22 are in allowable condition for at least the same reasons.

Claims 25-27

Claim 25 is directed to a method for distributing solder paste onto a mounting location of a circuit board. The method includes the step of positioning a solder paste distribution tool over a mounting location of the circuit board. The solder paste distribution tool defines a solder paste aperture having a non-circular cross-sectional shape which includes partially coinciding circles. The method further includes the steps of applying solder paste to the mounting location of the circuit board through the solder paste distribution tool such that a portion of the solder paste passes onto the mounting location through the solder paste aperture having the non-circular cross-sectional shape, and removing the solder paste distribution tool from the mounting location.

Teshima does not teach or suggest a method for distributing solder paste onto a mounting location of a circuit board having a step of positioning a solder paste distribution tool over a mounting location of the circuit board where the solder paste distribution tool defines a solder paste aperture having a non-circular cross-sectional shape which includes partially coinciding circles.

Rather, as mentioned above in connection with claim 13, Teshima places focus on arranging fine mask holes 32 in a checker-board (or zigzag) pattern so that there is no possibility of bridging. In contrast, the method of claim 25 enables use of a particular solder paste distribution tool to control of solder movement relative to a stringer, as described in the Specification, for example, on page 8, line 24 through page 9, line 4. There is no such teaching or suggestion of such a tool in Teshima.

For the reasons stated above, claim 25, as amended, patentably distinguishes over the cited prior art, and the rejection of claim 25 under 35 U.S.C. §103(a) should be withdrawn. Accordingly, claim 25 is now in allowable condition.

Because claims 26-27 depend from and further limit claim 25, claims 26-27 are in allowable condition for at least the same reasons.

Newly Added Claims

Claims 28-31 have been added and are believed to be in allowable condition. Claims 28-29 depend from claim 13. Claims 30-31 depend from claim 25. Support for claims 28-31 is provided within the Specification, for example, on page 10, lines 21-26. No new matter has been added.

Conclusion

In view of the foregoing remarks, this Application should be in condition for allowance. A Notice to this affect is respectfully requested. If the Examiner believes, after this Amendment, that the Application is not in condition for allowance, the Examiner is respectfully requested to call the Applicant's Representative at the number below.

Applicant hereby petitions for any extension of time which is required to maintain the pendency of this case. If there is a fee occasioned by this Amendment, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50-0901.

If the enclosed papers or fees are considered incomplete, the Patent Office is respectfully requested to contact the undersigned collect at (508) 366-9600, in Westborough, Massachusetts.

Respectfully submitted,



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Attorney Docket No.: EMC02-01(00053)
Dated: October 20, 2003